APPENDIX H

FACILITY AND PROGRAM DESCRIPTION

H1.0 HANFORD SITE

The Richland Operations Office (RL) manages the Hanford Site for the U.S. Department of Energy. The Site supports programs in waste management, environmental restoration, science, and energy. RL leases some of the Site land to Washington State, which in turn leases it to U.S. Ecology and Energy Northwest (formerly Washington Public Power Supply System). Including RL personnel, the Hanford Site has a total workforce of 11,131 and an annual budget of approximately $1.1 billion (Fig. H1).

The Hanford Site, approximately 1,450 km^2 (560 mi^2) of semiarid shrub and grasslands, is located just north of the confluence of the Yakima and Columbia Rivers. The Columbia River forms part of the Site's north and east boundaries. Approximately 6 percent of the land area is actively used. The rest of this land, with restricted public access, provides a buffer for the smaller areas historically used for nuclear material production and waste storage and disposal. The developed land is divided into the following five areas.

- The 100 Areas (e.g., 100-B, 100-C, 100-D, 100-F, 100-H, 100-K, 100-N) lie along the south shore of the Columbia River in the northern portion of the Hanford Site and contain reactors used during and after World War II primarily for plutonium production; now all shut down.

- The 200 East and 200 West Areas lie in the center of the Hanford Site; they were used to process spent nuclear fuel to extract plutonium; now they are focused on waste management. They are the primary areas of focus for this event.

- The 300 Area, near the southern border of the Hanford Site, contains laboratories, support facilities, and former fuel-manufacturing facilities.

- The 400 Area, between the 300 and 200 Areas, contains the Fast Flux Test Facility and the Fuels and Materials Examination Facility.

- The 600 Area designates the land between the operational areas.

H1.1. B PLANT

B Plant (formally designated the 221-B Building) was constructed during World War II as a radiochemical processing facility (Fig. H2). It began separations processing using irradiated

Figure H1. Hanford Site, Washington.

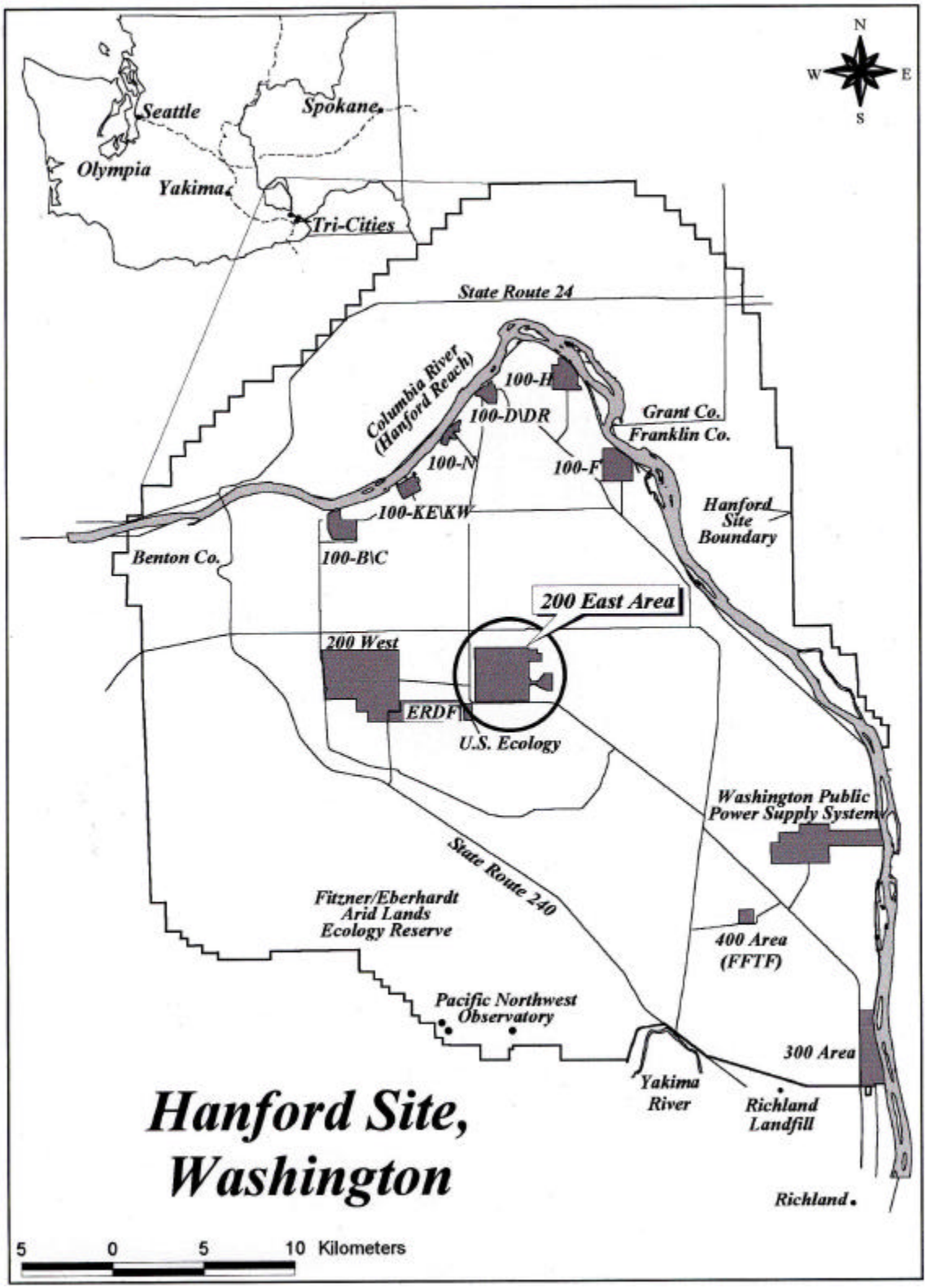
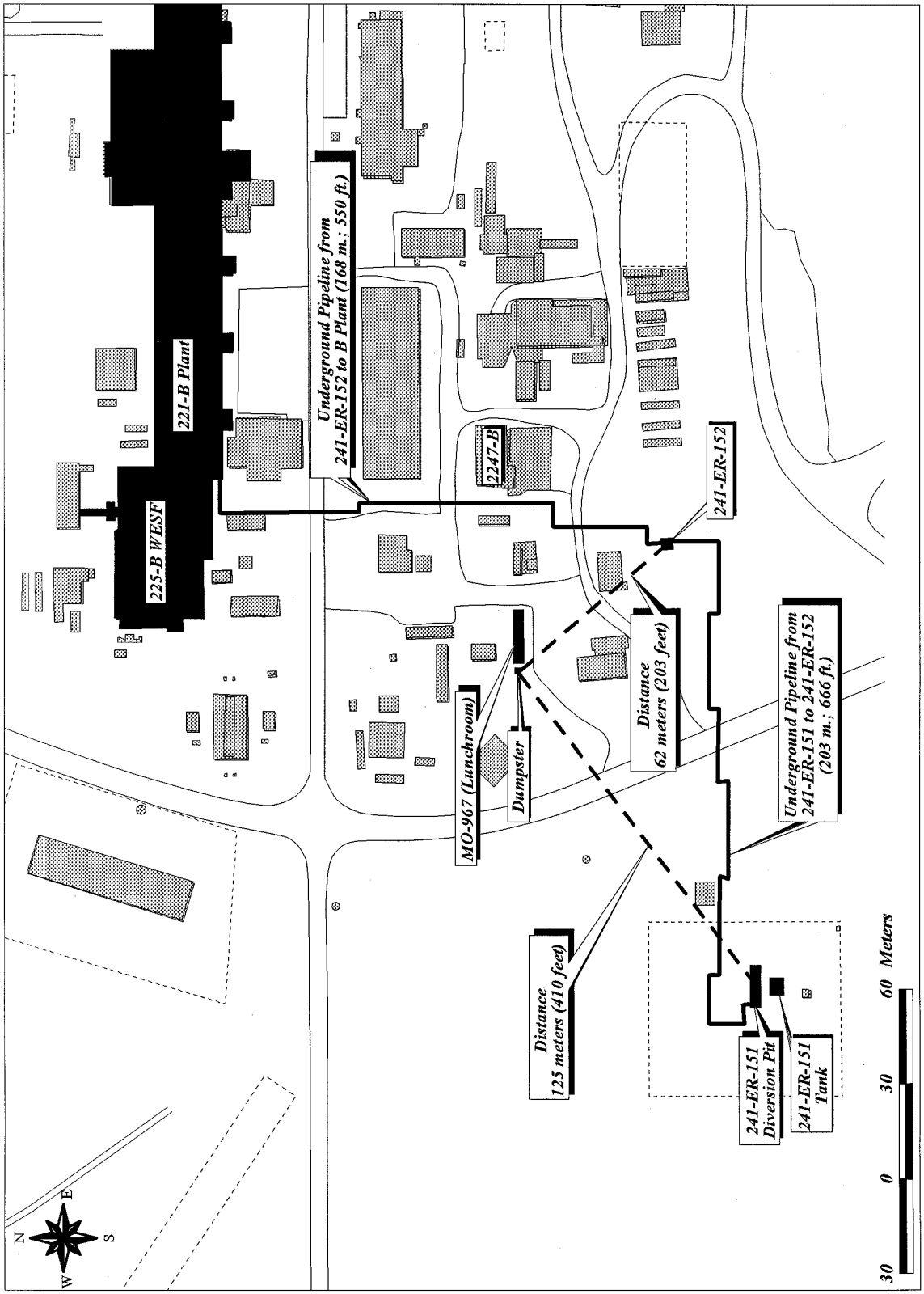


Figure H2. Relationship of Facilities Near B Plant.



uranium feed in April 1945 and operated as a plutonium separations facility until 1952. Between 1954 and 1983, it was used for various operations, including separating strontium-90 (^{90}Sr) and cesium-137 (^{137}Cs) from underground tank waste to aid in the reduction of the heat being generated from radioactive decay. Beginning in 1995, B Plant began undergoing the formal deactivation and shutdown process, which was completed in 1998. The process involves severing the plant's infrastructure from the Waste Encapsulation and Storage Facility (WESF) where the incorporated ^{90}Sr and ^{137}Cs are stored, and blanking deactivated piping and lines, disconnecting power sources, and flushing vessels and cells. The work that began at Diversion Pit 241-ER-152 on September 15, 1998, supported B Plant deactivation and shutdown.

H1.2. 241-ER-152 DIVERSION PIT

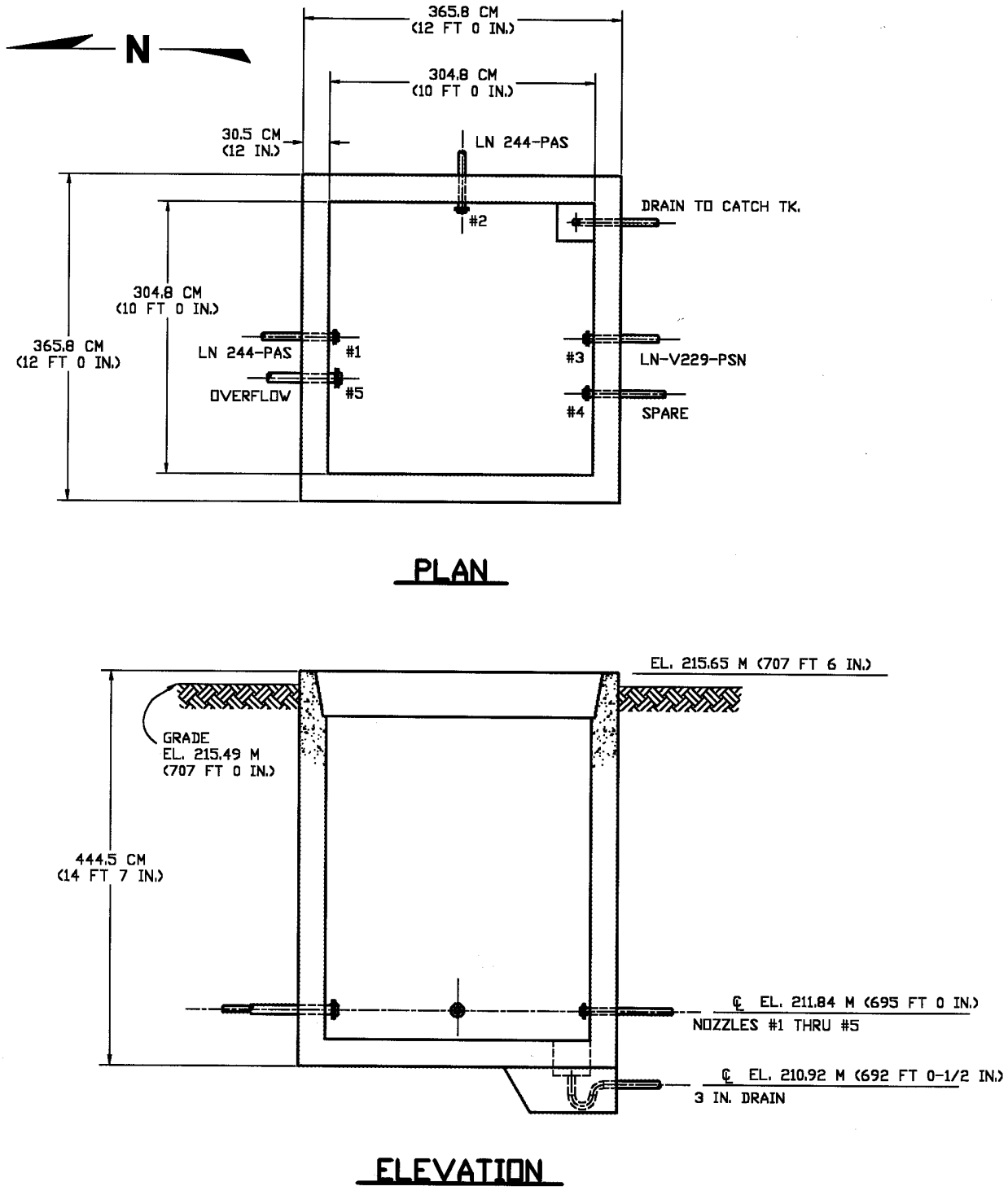
During the operations of the B Plant complex as a radiochemical processing facility, liquid solutions of process waste were transferred to other facilities or waste storage tanks through an underground system of pipes. These pipes (steel lines encased in concrete) make up a waste transfer network through which highly radioactive chemical solutions can be pumped to tanks outside of facilities, to waste processing units, and even between the 200 East and 200 West Areas. At many of the intersections in this network, the liquid is directed to its destination through removable piping located in diversion pits. Diversion pits (Fig. H3) are subsurface concrete-lined pits where two or more underground waste transfer pipes penetrate the pit walls, ending in nozzles. By connecting short sections of curved or flexible pipe (jumpers) to the selected nozzles, the liquid waste flow can be directed through any combination of pipes entering the diversion pit for transfer to its final destination. These are attached and manipulated remotely by operators standing at the edge of the pit and using long tools to increase the distance between the operators and the contamination, thereby limiting their radiological exposure.

The inside surfaces of the diversion pits normally are contaminated with radioactive material deposited when waste liquids leaked through the pipe connections or installed valves. The pit surfaces and all the equipment in the pit are routinely contaminated with slightly to moderately radioactive liquid used to flush the pipes and tanks after a highly radioactive waste transfer. Most diversion pits in the system, including the 241-ER-152 Diversion Pit, have drains in the bottom of the pit leading to a tank where the flush water accumulates and is pumped out periodically. Except during jumper work, the pits are covered with large concrete cover blocks that are intended to contain the contamination and shield workers on the surface from direct radiation from the contamination or waste in the piping. To line up the system for a transfer, an open-top tent is erected around the pit, fixative is sprayed on the inside to "fix" smearable contamination, cover blocks are removed, and the jumpers are placed in the appropriate configuration. This process was under way at the 241-ER-152 Diversion Pit on September 15.

The 241-ER-152 Diversion Pit is located approximately 170 meters (560 feet) directly south of the west end of the B Plant/WESF main structure. The pit has a 3 meter by 3 meter (10-foot by 10-foot) square opening, with the floor surface 4 meters (13 feet 7 inches) below the pit rim. Five pipes penetrate the walls at a level of 0.3 meter (1 foot) above the floor (Fig. H4).

Figure H3. Typical Diversion Pit Under Construction.

Figure H4. Diversion Pit 241-ER-152 Drawing.



The piping system is part of the Tank Waste Remediation System (TWRS) Project, which includes the responsibility of safely managing and retrieving for disposal 204.4 million liters (54 million gallons) of radioactive waste stored in 177 underground tanks.

H1.3 WORK CONTROL

For work such as the task performed at Diversion Pit 241-ER-152 beginning September 15, TWRS uses a planning and scheduling organization to control work. The organization reviews the work and, if necessary, develops a work package. The work package contains the instructions on how to perform the work. Often the work package references preapproved procedures for significant portions of the work. The work packages are reviewed by Operations, Engineering, Radiological Control, and other organizations as necessary. Before they are worked, packages are reviewed and released by the shift office. When the work is completed, the work packages are archived and signed off as complete. The package would identify the use of a fixative but would not necessarily note that it is monosaccharide based.

H1.4 CONSTRUCTION FORCES AREA

The following auxiliary structures related to the B Plant/WESF operations are located in the area between the main B Plant/WESF structure and the 241-ER-152 Diversion Pit.

- Temporary mobile structures and permanent structures were used by the Site Engineering and Construction contractor to support their operations, including the shutdown of the B Plant facility.

- The MO-967 Mobile Office is used as a construction personnel staging area and lunchroom.

- Other structures in the area include an Ironworker's Shop (2247-B), a Construction Ice House (2201-B) to support drinking water supplies for the construction force, restroom structures, and other support buildings.

These auxiliary facilities are located near major facilities like the B Plant complex to support the facilities. They use the utilities provided by the main facilities. Many of these auxiliary facilities are being shut down and closed because the major tasks in the B Plant shutdown are completed. Construction workers and other craft personnel are moving to other facilities on the Site.

H1.5 CANISTER STORAGE BUILDING

The Canister Storage Building, approximately 464 meters (0.3 mile) from the B Plant complex, is being constructed in the 200 East Area to provide dry staging and interim storage for spent nuclear fuel from water-filled basins in the 100 K Area, which are approximately11 kilometers

(7 miles) away. The Canister Storage Building is located 1.3 kilometers (0.8 mile) from 241-ER-152.

The Canister Storage Building consists of a steel operating-area shelter enclosing the load-in/load-out area and the Hot Conditioning System Annex and three equal sized below-grade concrete vaults covered by a concrete operating deck. Support functions and equipment are housed in a steel support building located at the north side of the operations building.

H2.0 RADIOLOGICAL CONTROL PROGRAM

Routine radiological monitoring is a fundamental radiological control practice across the nuclear industry. The Hanford Site has operated a routine radiological monitoring program since Site operations began in the early 1940s. The goal of the Site Radiological Monitoring Program is to evaluate the effectiveness of Site operations in anticipating, preventing, and controlling potential environmental and public impacts.

H2.1 OVERVIEW

Primary emphasis on control and measurement of radioactive material is placed at individual facilities, with confirmatory measurements being made for the balance of Site areas.

- *Facility Programs—Facility radiological monitoring programs focus on specific tasks and activities at individual facilities.*

- *Site Programs—Site radiological monitoring programs focus on the interface areas between facilities and the balance of the Site and at offsite locations.*

Routine radiological monitoring programs are designed using a graded approach. A graded approach focuses resources and attention on those areas and activities with the greatest risks. Routine radiological monitoring of facility and Site operations is performed at intervals ranging from per shift to annually. The routine radiological monitoring program is designed and operated with enough flexibility to be increased or decreased in accordance with information from daily Site operations.

The regulatory requirements applicable to the routine radiological monitoring program at Project Hanford Management Contract (PHMC) programs and facilities applied under this graded approach concept are Title 10 *Code of Federal Regulations* (CFR) Part 835 "Occupational Radiation Protection" [1] and the *Hanford Site Radiological Control Manual*[2]. The PHMC

[1] 10 CFR 835, "Occupational Radiation Protection," *Code of Federal Regulations*, Title 10, Part 835, as amended.

implements these requirements using a PHMC-specific program requirement such as that found in HNF-PRO-435, *Required Radiological Surveillances*[3]. Before the PHMC began (October 1, 1996), similar program control documents governing the planning and execution of routine radiological monitoring programs also were in effect.

PHMC major subcontractors monitor within and immediately adjacent to facility boundaries for potential radiological impacts. The Near-Facility Monitoring Program, jointly operated by Waste Management Federal Services of Hanford, Inc. (WMH), Waste Management Federal Services, Inc., Northwest Operations (WMNW), Fluor Daniel Hanford, Inc.(FDH), and DynCorp Tri-Cities Services, Inc. (DYN), monitors the spaces outside facility boundaries out to the Site boundary. Similarly, PHMC major subcontractors monitor items leaving facilities for potential radioactivity and DYN oversees PHMC Sitewide infrastructure processes for monitoring items leaving the Hanford Site.

H2.2 ROLES AND RESPONSIBILITIES

As specified in 10 CFR 835, the PHMC Radiological Control Program operates in compliance with the Radiation Protection Program (RPP), which was written by FDH and approved by the U.S. Department of Energy (DOE). Compliance with the regulations in 10 CFR 835 is implemented primarily through compliance with the *Hanford Site Radiological Control Manual*, a policy and guidance manual common to all DOE contractors on the Hanford Site.

The PHMC Radiological Control organization is responsible for the program controlling radioactive materials and controlling the radiation dose to workers and visitors in the PHMC-controlled facilities and areas. The program is organized similarly to the main PHMC contract structure, with the FDH Site Radiation Protection director integrating five company-level radiological control managers—B&W Hanford Company (BWHC), Lockheed Martin Hanford Corporation (LMHC)/TWRS, DYN, DE&S Hanford, Inc., and WMH—who report directly to their subcontractor company management. Thirteen facility/project radiological control managers report directly to plant managers or directors. These facility/project radiological control managers are matrixed to subcontractor company-level radiological control managers.

The FDH Radiation Protection director maintains a small central radiological control organization that establishes PHMC radiation protection standards, maintains the Site-level Radiation Protection Interpretive Authority, and provides Site technical experts to write and support PHMC-wide radiological control procedures. The central radiological control

---

[2] HSRCM-1, Rev. 2, *Hanford Site Radiological Control Manual*, U.S. Department of Energy, Richland Operations Office, Richland, Washington, 1994. Available on the Internet as DOE/RL-96-109, *Hanford Radiological Control Manual*, U.S. Department of Energy, Richland Operations Office, Richland, Washington, at http://www.hanford.gov/docs/r196-109/a006t010.htm.

[3] HNF-PRO-435, *Required Radiological Surveillances*, Fluor Daniel Hanford, Inc., Richland, Washington.

organization is the final approval authority for regulatory requirement bases. Accountability for requirements given to the facilities and projects, decision-making based on documented technical bases, and integration of Sitewide radiological control is through the Radiation Protection Center of Expertise (RPCOE) Process. The RPCOE is a committee consisting of facility and project radiological control managers. The RPCOE routinely meets under the direction of the FDH Radiation Protection director, the chairperson.

The facility and project radiological control managers directly control the radiation protection staff engineers and facility technical authorities and the radiological control technicians (RCT) for each facility radiological control program. Facilities may use Sitewide or facility-specific procedures for the radiological control tasks. Facilities and projects are responsible for supervising and training all facility radiological control personnel.

The FDH Environmental Compliance Program organization is responsible for the program monitoring the release of radioactive material into the environment. Liquid and gaseous effluents that may contain radioactive material are continuously monitored for radioactivity. Near-facility environmental monitoring is defined as monitoring near facilities that have potential to discharge or have discharged, stored, or disposed of radioactive materials. Monitoring locations are associated mostly with major nuclear facilities, environmental restoration activities, and waste storage or disposal facilities such as burial grounds, tank farms, ponds, cribs, trenches, and ditches. Routine sampling and monitoring includes samples from ambient air, water from surface-water disposal units, external radiation, soil, sediment, vegetation, and animals.

H2.3 RADIOLOGICAL AND HAZARD IDENTIFICATION CONTROL

The primary occupational radiological hazards that may be encountered in PHMC-operated facilities consist of direct-radiation-dose hazards, external contamination hazards, and potential uptakes of radioactive materials into the body through inhalation, ingestion, injection, or immersion. The types of radioactive material that may be encountered include a wide range of fission products, transuranic radionuclides, and neutron-activated materials. Radioactive materials that may be encountered in the workplace range from levels typical of environmental samples (picocuries of radioactivity per gram) to millions of curies of radioactive material in a wide variety of physical and chemical forms, both contained and widely dispersed. Strict limits of doses of ionizing radiation from these radioactive materials are defined for occupationally exposed workers, with much-reduced dose limits specified for minors and members of the public during direct onsite access at a DOE facility.

Basic radiological control on the Hanford Site includes clearly marked areas that are controlled for radiation protection purposes. Many facilities and areas of the Hanford Site are posted as radiologically controlled areas (RCA). Access to these areas requires a minimal amount of training or escorting. Individuals must at least be aware that hazards exist in the RCA; safety requires that they read and follow the posted signs and directives.

Areas where external sources of ionizing radiation exist are posted as radiation areas or high radiation areas and are not only posted, but protected from individual entry by barriers and locked doors. Access to these areas for performing work tasks requires various levels of training, instrumentation for measuring the external radiation levels, and the wearing of dosimeters to measure the individual's accumulated exposure to ionizing radiation.

Areas where radioactive material is, or has the potential to be, in a loose or uncontained form are called contamination areas (CA) and High Contamination Areas (HCA) for very high levels of these loose radioactive materials. Uncontained radioactive material or contamination can cause shallow doses to the skin if it is present on, or near, uncovered skin. If the contamination is in an easily dispersible form, such as a dust, powder, or gas, it could be inhaled into the body where it will expose the organs and tissues. Measured or potential areas of radioactivity in the air are controlled and posted as airborne radioactivity areas (ARA). If the contamination is on foodstuffs or in drinking water, the radioactive material could be ingested and cause internal doses to the individual. Areas that surround CAs are posted as radiological buffer areas (RBA). Contamination is not expected in an RBA, but surveys of hands and feet are required for personnel leaving an RBA.

To prevent radioactive contamination from spreading outside the controlled areas, all equipment and material leaving a CA, HCA, or ARA is surveyed for release. Using portable instruments sensitive to alpha radiation or beta and gamma radiation emitted from any contamination on the surface, RCTs carefully scan the surfaces of equipment and materials to verify that contamination is not present. Personnel leaving a CA, HCA, or ARA must be surveyed for contamination. DOE regulations and the *Hanford Radiological Control Manual* require that instruments and survey techniques must be sensitive enough to meet fixed and removable surface contamination limits. Higher levels of radioactive contamination are allowed for radionuclides that are less hazardous to humans. The PHMC Radiological Control Program does not release equipment and materials from a CA, HCA, or ARA if approved survey techniques and detection instrumentation detect any radioactive material. Properly surveyed material released from a CA, HCA, or ARA can be released unconditionally from any RCA on the Hanford Site and released off Site.

Workers who perform tasks in contaminated areas or on contaminated equipment are required to wear protective clothing to keep the contamination off their skin. The protective clothing is controlled after use to prevent any contamination from being released. Respirators that filter airborne contaminants are required when other engineered controls are not available to prevent exposure to airborne contamination.

Work practices such as using glovebags or portable containment rooms that limit the spread of contamination to the smallest possible work location must to be considered by the work planners using the PHMC as low as reasonably achievable work practices program and used, if practical. Dust fixative sprays and other products or techniques are used to contain or control contamination when practical.

The PHMC Radiological Control Program uses routine surveillance techniques to ensure that the contamination control activities are effective. Routine surveys are scheduled in

noncontamination areas to verify their status. Following approved procedures, direct surveys are made with portable radiation survey instruments to look for surface contamination. Loose surface contamination is surveyed by lightly rubbing a survey medium over an area of approximately 100 square centimeters. The medium is analyzed for any radioactive material. This is called a technical smear.

The documentation on the survey form expresses surface contamination in disintegrations per minute per 100 cm^2. Surveys include readings of external radiation doses. If the contamination found is beyond the range of a typical beta/gamma and alpha contamination meter, portable dose meters will be used to measure the radiation field over the contamination. Experimentally derived factors can relate the dose readings to contamination levels on the surface. These readings will be documented in the survey reports in millirems or millirads per hour. The control of radioactive material requires that when a survey detects contamination in an area where it was not expected, a wider survey area or an increased survey frequency is initiated to determine the contamination source and to control its spread as soon as possible.

H2.4 MECHANISM OF DISCOVERY

The 1998 City of Richland Landfill-contamination event was identified initially through the operation of the routine radiological monitoring program. DYN was performing routine radiological monitoring of the 200 East Area construction forces facilities (CFF). Monitoring had been increased to daily checks (on week days) in early August for selected 200 East Area CFFs, because radiologically contaminated rodent activity was evident in the immediate vicinity. These checks were negative through Friday, September 25, 1998. On Monday, September 28, 1998, checks of Mobile Office MO-967, used as a lunchroom, detected several spots of radioactive contamination.

H3.0 BIOLOGICAL VECTOR CONTROL PROGRAM

PHMC biological vector control is a function of The FDH Office of Biological Control, contracted by the PHMC to WMNW. The FDH Office of Biological Control is conducted at the Hanford Site by licensed professionals experienced in the control of pest animals and vegetation, particularly when associated with radioactive contamination. Pest control goals include limiting pest ingress and egress at facilities, creating a healthy work environment, training maintenance staff to control and prevent biologic intrusion, controlling plant- and animal-caused transport of contamination, and preventing pest damage to waste facilities.

Biota-caused transport of radioactive contamination is controlled by The FDH Office of Biological Control working in cooperation with the Near-Facility Environmental Monitoring group at WMNW, DYN RCTs, and facility management. Environmental monitoring near operations facilities is directed by the PHMC as part of the Environmental Compliance Program, which funds Near-Facility Environmental Monitoring. Monitoring of ambient air, soil, vegetation, and selected animals is directed by WMNW and conducted by DYN Site

Surveillance RCTs. Site facility landlords are responsible for monitoring areas inside each tank farm perimeter and within active waste-site boundaries for contamination spread and can call on The FDH Office of Biological Control for mitigation support.

Biological controls can be implemented either at the request of facility management in response to facility monitoring or as a result of routine radioactivity surveillances of Near-Facility Environmental Monitoring detecting radioactive contamination resulting from biotic activity (e.g., contaminated mouse feces). Discovery of biota-related contamination activates additional monitoring and surveillance in conjunction with increased animal control by The FDH Office of Biological Control (WMNW).

Environmental monitoring, including insect, animal, and vegetation monitoring, has existed at the Hanford Site since 1944. The Hanford Site operations pioneered the science of environmental monitoring. It was unique for measuring contamination levels in stack gases, vegetation, river water, wildlife, and groundwater. In the 1940s and 1950s, the Site's environmental monitoring records were among the most complete in the world. Reports were issued monthly and quarterly.

Annual DOE and contractor environmental status reports have been issued since 1965, documenting approximately 2,000 incidents of biota-related radioactive contamination. These incidents involved approximately 50 separate species of biota. The most common animal species involved in radioactive contamination is the deer mouse (*Peromyscus maniculatus*); the most common vegetation implicated in such incidents is the tumbleweed (*Salsola kali*). Terrestrial and flying insects are recognized vectors of contamination. In the past, flying insects near and on the Columbia River have served as frequent vectors of contamination, affecting the food chain and regional ecosystem. (Harvester ants [*Pogonomyrmex owyheei*] are relatively common intruders to below-ground waste facilities.) *Fruit flies (Drosophila spp.) previously have **NOT** been noted in the transfer of radioactive contamination*. As a result, monitoring of fruit flies has not been a routine activity.

Biological vector control in the vicinity of this contamination incident goes back more than 20 years (see Section 5.3). Even though fruit flies were not identified as vectors in the radioactive contamination spread in August, the WMNW The FDH Office of Biological Control team responded to concerns identified by both facility radiation surveys and routine Near-Facility Environmental Monitoring radiation surveys. Control efforts had focused on harvester ants and/or rodents at the B Plant K-3 Filter Building (BWHC facility), 241-ER-151 Diversion Pit (LMHC/TWRS), 241-ER-152 Diversion Pit (LMHC/TWRS), associated transfer lines (LMHC/TWRS), and various craft shops (Fluor Daniel Northwest, Inc.). Because all species collected during pest control operations are surveyed for radioactivity, and because numbers of contaminated species were higher than expected, radiation control surveys were focusing on this area when, on September 28, fruit flies were found to be spreading contamination. Because this was a new radiological vector, additional flying-insect traps were purchased to monitor the potential fruit fly-caused spread of contamination. When more contaminated fruit flies were discovered, chemical control measures were implemented, including purchasing a truck-mounted fogger for area treatment.

H4.0 SOLID WASTE DISPOSAL PRACTICES

DYN is responsible for collecting and transporting nonradioactive and nonhazardous solid waste (refuse) for offsite disposal. DYN operates two 27 cubic meter (35-cubic-yard) capacity compactor trucks that collect and dispose of the refuse collected from approximately 300 dumpsters on the Hanford Site. In each of the past two years, DYN Transportation Operations has transported approximately 1450 metric tons (1,600 tons) of refuse to the City landfill. Major categories of refuse disposed of off Site consist of the following:

- Office and lunchroom refuse consisting of paper, cardboard, plastics, textiles, and food refuse.

- Construction debris consisting of metals, wood products, grounds maintenance refuse, and miscellaneous debris.

Before this contamination event occurred, the process for collection, transport, and offsite disposal of Hanford refuse was as follows.

- PHMC and contractor procedures identified the types of refuse that can be placed in the dumpsters.

- DYN Transportation Operations collected refuse placed in dumpsters for delivery to the City landfill.

- Refuse from areas where radioactive contamination could occur was surveyed for release before leaving such areas.

Drivers of the collection vehicles receive training about the types of refuse that are prohibited, this serves as an additional mechanism to prevent nonconforming refuse from being taken to the City landfill.

H4.1 AGREEMENT WITH THE CITY OF RICHLAND

RL entered into a contract with the City of Richland to dispose of nonradioactive, nonhazardous solid refuse. The contract was signed in September 1995, effective October 1, 1995, through September 30, 2005, and on March 31, 1996, the Hanford Central Landfill was closed. The City of Richland owns and operates a municipal landfill, which is permitted by the Benton-Franklin Health Department. The City agreed to accept the following types of refuse during the period that the City landfill had adequate capacity and is permitted to accept the refuse it is receiving, and while the contract with the City is in effect:

- Paper and cardboard
- Wood and miscellaneous debris
- Construction debris

- Metals
- Plastic
- Grounds maintenance refuse
- Food refuse
- Textiles
- Glass
- Noncontagious medical refuse
- Rubber and leather refuse.

The City will not accept any of the following types of refuse:

- Hazardous or dangerous materials or liquids
- Asbestos-containing materials
- Automotive-type batteries (lead acid)
- Explosives
- Flammable liquids
- Any regulated material
- Demolition debris that is or typically would be deposited in demolition landfill
- Radioactive waste.

The City will not accept refuse held in metal or plastic drums or other containers. Any containers of material must be emptied at the landfill for City inspection. All drums must have bottoms and tops removed by DOE or its contractor before they are disposed of in the City landfill.

H4.2 OFFSITE (NON-HANFORD) LANDFILL REFUSE ACTIVITIES

The first Hanford Site refuse was delivered to the City landfill on December 29, 1995. Starting on that date, each load was inspected by an RCT as it was unloaded and spread out on the face of the landfill. The RCT used professional judgment to identify portions of the refuse to survey for radioactive contamination using field detection instruments. After several weeks with no contamination detected, the surveys were conducted on the days that Hanford Site refuse was delivered, but not necessarily at the time the truck was unloaded. The surveys focused on areas where refuse from the Hanford Site had been deposited. Daily surveys continued through the first week of April 1996. Because no contamination was detected during these daily surveys, survey frequency was reduced to weekly. Weekly surveys began on April 10, 1996, and continued until October 31, 1997. Daily surveys were reinstituted on November 3, 1997, when radioactive rubber boots were discovered. The daily surveys continued through January 15, 1998. It was later determined that characterization of the material indicated that the radiological material discovered on the boots was not consistent with enriched uranium present at the Hanford Site. Therefore, the conclusion drawn from all the information available is that the material could not have originated from Hanford Site activities.

State regulations require the City to cover all refuse received with at least 15.24 centimeters (6 inches) of cover by the end of each operating day. The general public has not been allowed in

the active area of the City landfill, although commercial accounts still unload directly into the City landfill. In addition to the refuse collected from Hanford Site dumpsters, other Hanford Site refuse is delivered to the City landfill. These shipments are accompanied by a Solid Waste Disposal Receipt - Bulk Wastes form, which requires a certification that the refuse[4] meets the acceptance criteria for disposal of nondangerous, nonradioactive refuse at the City landfill. All Hanford Site refuse shipments to the City landfill were stopped on October 1 (September 30 for sanitary refuse; October 1 for construction debris). No Hanford Site refuse has been delivered to the City landfill since that time.

H4.3 SURVEILLANCE AND OTHER PROTECTIVE MEASURES

Hanford Site refuse destined for offsite disposal is subjected to a number of protective measures established to prevent inadvertently transferring unacceptable substances, especially radioactive materials, to the disposal site. Site policies and procedures require facilities that store and/or handle radioactive materials to implement an appropriate level of protective measures to prevent a loss of control and to have monitoring systems to verify that control measures are effective. Contamination is controlled at the source and barriers are in place at the boundaries.

[4] Although the City of Richland uses the term “waste” to mean only contaminated material, on the Hanford Site the term also is used to mean refuse.